

REMARKS

Prior to entry of this Amendment, Claims 43-45, 52-66, 108, 112 and 113 were pending and under consideration. With this Amendment, Claims 43-45, 52-66, 108, 112 and 113 have been cancelled and Claims 114-141 have been added. Thus, after entry of 5 this Amendment, Claims 114-141 are pending and under consideration.

The Amendments of the Specification

The specification has been amended to include 20 sheets of formal drawings 10 (EXHIBIT A) to replace the originally filed informal drawings.

The Amendment of the Claims

Support for Claims 114, 136 and 139 concerning the half-life of the double D-loop is found at page 19 lines 23-34.

15 Support for Claims 115, 128, 138 and 141 concerning triplex, quadruplex and Z-DNA is found at page 20 lines 29-31, page 39 lines 1-3, Figs. 6 and 7, and in original Claims 3, 4 and 5.

Support for Claim 119 is found, for example, at page 21 lines 34-40.

20 Support for Claim 120 is found at FIG. 2C, 2D and 2E and on page 1, bottom paragraph in the Amendment filed on July 17, 2001.

Support for Claims 121-127 concerning recombinase is found at page 25 line 1 through page 27 line 28.

Support for Claim 128 concerning a secondary polynucleotide is found at page 21 lines 3-11.

25 Support for Claim 129 concerning nucleic acids is found at page 13 lines 14-40.

Support for Claims 130-132 concerning various substituents is found at page 23 line 27 through page 24 line 40.

Support for Claims 133-135 concerning cells is found at page 29 line 4 through page 36 line 28.

30 Support for Claims 136-138 concerning kits is found at page 38 lines 5-9.

Support for Claims 139-142 concerning compositions is found at page 4 lines 6-12.

All of the amendments are supported throughout the specification and claims as originally filed. Accordingly, the amendments do not present new matter and entry is proper.

5 **Objections to the Drawings**

The drawings were objected as set forth in Form 948 attached to the action mailed 15 June 2002. The drawings submitted herewith are in compliance with Drawing Standards under 37 CFR § 1.84.

10 **Objections to the Claims**

Rejection of Claims 43, 52-66, 108 and 113 Under 35 U.S.C. §102(e)

Claims 43, 52-66, 108 and 113 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Pati *et al.* (U.S. Patent No. 5,948,653). The rejection is rendered moot by the cancellation of these claims.

The newly added Claims 114-142 require that the locking complex include a locking complex wherein the half-life of the double D-loop is at least about 5-fold longer than said double D-loop without said locking complex. In other claims, the double D-loop includes a triplex, a quadraplex, a Z-form duplex, a locking complex that is not an internal homology clamp, or includes at least one non-Watson Crick base pair. The Pati *et al.* reference is silent in regard to each of these limitations, and hence, Pati *et al.* do not anticipate the claimed subject matter.

Rejection of Claims 43, 52-66, 108, 112 and 113 Under 35 U.S.C. § 103(a)

25 Claims 43, 52-66, 108, 112 and 113 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Pati *et al.* The rejection is rendered moot by the cancellation of these claims. As described above, the cited reference fails to teach each and every limitation of the pending claims.

Rejection of Claims 43-45, 52-66, 108, 112 and 113 Under 35 U.S. C. § 103(a)

Claims 43-45, 52-66, 108, 112 and 113 stand rejected under 35 U.S. C. § 103(a) as allegedly being unpatentable over Pati *et al.* as applied to claims 43, 52-66, 108, 112 and 113, and further in view of Helene *et al.* (Biochimica et Biophysica Acta, 1990, 1049:99-125). The rejection is rendered moot by the cancellation of these claims.

Helene *et al.* teach a single stranded polynucleotide that binds to a sequence of duplex DNA to form a triplex. FIG. 1 of Helene *et al.* shows a polynucleotide binding to a *target nucleic acid* to form a triplex structure. Neither Helene *et al.* nor Pati *et al.* provide any guidance as to how one would use such a polynucleotide in a double-D complex. Pending Claims 115, 116, 136 and 141 concern forming a triplex *between two targeting polynucleotides*. This feature is neither shown nor suggested in either of the references.

Rejection of Claims 43, 45, 52-66, 108, 112 and 113 Under 35 U.S. C. § 103(a)

Claims 43, 45, 52-66, 108, 112 and 113 stand rejected under 35 U.S. C. § 103(a) as allegedly being unpatentable over Pati *et al.* as applied to Claims 43, 52-66, 108, 112 and 113, and further in view of Barton *et al.* (U.S. Patent No. 5,225,556). The rejection is rendered moot by the cancellation of these claims.

Barton *et al.* teach intercalating probes that can bind Z-DNA and A-DNA. Barton *et al.* do not teach or suggest the use of targeting polynucleotides forming a double-D complex with a target, and do not teach or suggest the use of a locking complex in a double-D complex.

The newly added Claim 118 requires that the locking complex include a locking complex comprising Z-form duplex. Pati *et al.* do not teach a locking complex comprising Z-DNA located in a central region of targeting polynucleotides in a double-D loop structure. Neither Barton *et al.* nor Pati *et al.* provide any guidance as to how or where one would locate Z-DNA within a double-D loop structure. There is no teaching or suggestion in Pati *et al.* of labeling of a double-D loop structure using *soluble* intercalators as taught by Barton *et al.* Neither Pati *et al.* nor Barton *et al.* provide guidance as to how one would use a soluble intercalator in conjunction with a double-D loop structure including Z-DNA.

Rejection of Claims 43-45, 52-66, 108, 112 and 113 Under 35 U.S. C. § 103(a)

Claims 43-45, 52-66, 108, 112 and 113 stand rejected under 35 U.S. C. § 103(a) as allegedly being unpatentable over Pati *et al.* as applied to Claims 43, 52-66, 108, 112 and 113, and further in view of Simonsson *et al.* (Nucleic Acids Research, 1998, 26:1167-1172). The rejection is rendered moot by the cancellation of these claims.

Simonsson shows an *intramolecular quadruplex* (FIG. 5) and teaches that such a complex is stable. In Pati *et al.*, there is no showing or suggestion of forming an *intramolecular quadruplex*. The claimed composition includes a locking complex formed from a first and a second targeting polynucleotide, and is therefore an *intermolecular* complex. Neither Pati *et al.* nor Simonsson *et al.* provide any guidance as to where one would place an intramolecular quadruplex in a double-D loop structure. It could be located at any position along one of the target nucleic acids or at any position along one of the targeting polynucleotides, for example. In Pati *et al.* there is no teaching or suggestion of using a quadruplex structure. Thus, neither Pati *et al.* nor Simonsson *et al.* provide guidance as to how one would use a quadruplex in conjunction with a double-D loop structure. There is clearly no suggestion in either reference for placing an intermolecular quadruplex in a central region of targeting polynucleotides.

20 **Conclusion**

Applicants submit that amended Claims 114-142 satisfy all of the statutory requirements for patentability and are in condition for allowance. An early notification of

the same is kindly solicited.

Respectfully submitted,

DORSEY & WHITNEY LLP

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By: John F. Brady
John F. Brady
Reg. No. 39,118

10 Dorsey & Whitney LLP
Four Embarcadero Center, Suite 3400
San Francisco, California 94111-4187

Telephone: (650) 494-8700
Facsimile: (650) 494-8771